

time in and out of legal proceedings. So class sizes might be quite small, small enough that you might wonder whether this is worth the effort, because not only are there fewer inmates to begin with but also few can commit to a full semester of classes. It is even more unlikely that they will be there long enough to complete enough classes while in jail to earn an associate degree (that is, if sufficiently many classes are offered to do so).

On the flip side, this means you can spend more time with each student and help them at the critical time of their release when they need support to transition to your own institution or some other local university or community college. The fact that you teach only a few students also makes it more likely that you can convince your institution to lift tuition fees. The small number of students also makes such classes good candidates for inside-out classes: classes where half of the students are inmates, and the other half are students from your institution. For the latter, this offers the opportunity to meet people very different from themselves and change the way they view the world in general as well as their education. After observing how much work the inmates put toward their classes, many are inspired to follow their example to make the most of their college experience, which they also come to regard as an amazing opportunity. For the inmates, an inside-out class offers them a boost in confidence. They get to see that they truly are college students—in classes without outside students, the inmates often falsely believe that the classes are diluted because they are not good enough—and what is more, that they are successful college students. Another advantage of inside-out classes is that your institution might accept to count them as part of your teaching duties. Training for inside-out classes is offered by the Inside-Out Center at Temple University; more information can be found at <https://www.insideoutcenter.org/training.html>.

So why do all of this? I believe that offering college-level math courses in our prisons is more important than offering any other subject. According to “Community College Students Face a Very Long Road to Graduation” by Ginia Bellafante, among the general population, about 40 percent of students who start at a 2-year college never finish because they do not complete the one math class they have to take. Math is the roadblock stopping so many people in America from getting a degree. By teaching that class in prison, it gives students a better chance of completing an associate degree either while in prison or after their release.

Moreover, the impact on the students’ lives is huge. In the US, 70 percent of prisoners return to prison within three years. The single most effective way to reduce recidivism is education: inmates that participate in any correctional education programs are 43 percent less likely to recidivate than those who do not according to [https://www.rand.org/pubs/research\\_reports/RR266.html](https://www.rand.org/pubs/research_reports/RR266.html), and earning an associate or bachelor’s degree while in prison drops the rate of recidivism to 13.7 percent and 5.6 percent, respectively.

Moreover, given that over 70 percent of state prisoners have not completed high school, it is clear that our social support systems, including our educational system, have failed so many of these men and women. Offering access to higher education in prisons is one way to attempt to break the cycle of crime and poverty that so many inmates are stuck in. In the words of UBB student Steve B., “UBB is an engine of change chugging within the junkyard. It is impossible to overstate the shift in thinking that takes place in a prisoner’s mind once he has been enriched with the potential found in higher learning. A real future has become conceivable, instead of just a dream for someone else.”

If you treat inmates like students, they will become students—and often they will surprise you and even become scholars. They will become inspiring agents of change whom we want to see out in our society.



Annie Raymond

#### Credits

Author photo is courtesy of the author.

## How to Organize a Graduate Workshop

*Rohini Ramadas and Isabel Vogt*

### Introduction

In February 2018, we—Rohini Ramadas and Isabel Vogt—organized a Graduate Workshop in Algebraic Geometry for Women and Mathematicians of Minority Genders.<sup>1</sup> It was an overwhelmingly positive experience for us and (we believe) for the speakers and participants. This is an

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<sup>1</sup>*By mathematicians of minority genders we mean any mathematician who believes their gender is generally underrepresented in the mathematical community. This includes, but is not limited to, women and transgender and nonbinary mathematicians.*

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Melody Chan during her lecture.

account of how we came to organize GWAGWMMG and a suggestion that you could organize a similar event.

### Why Hold Workshops for Mathematicians with Marginalized Identities?

We first met at the summer Women and Mathematics program at the IAS in 2015, when the topic was Aspects of Algebraic Geometry.<sup>2</sup> This was a transformative event in each of our careers as algebraic geometers. We discovered firsthand how easy it can be to ask questions and be vocal when you are not one of the only women mathematicians in a room. We learned a lot of math and made several friends, including each other. The connections we built at this one event positively influenced our experiences at countless other conferences and events.

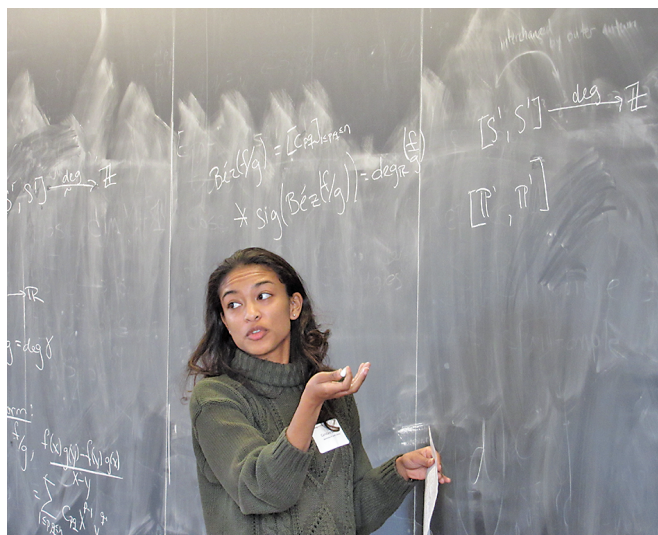
### The Lead-Up

The IAS Program for Women and Mathematics takes place every year. It recently instituted an “Ambassador” program, a grant of up to US\$2000 to be used to organize a math conference or outreach event.<sup>3</sup> During the summer of 2017 Isabel was a graduate student at MIT, and Rohini had just begun a postdoc at Harvard University. We applied together for the IAS Ambassador grant. Harvard and MIT both supported our application by pledging to each match the US\$2000 from the IAS, provided we were awarded the grant.

We began planning the structure of the workshop, coordinating with our department chairs, and getting tentative

<sup>2</sup>Occurring every summer for the last twenty-six years, the Women and Mathematics program is organized around some research area and features minicourses by leading women, afternoon problem sessions, and a research seminar. More information can be found at <https://www.math.ias.edu/wam>.

<sup>3</sup>At least one organizer must have previously participated in the Women and Mathematics program at the IAS. For more information, see <https://www.math.ias.edu/wam/about/ambassador>.



Candace Bethea during her short participant talk.

speaker confirmations in July 2017 before we submitted our initial grant application. We decided to hold the workshop in February 2018, giving us approximately six months to plan after hearing back. Before choosing an exact date, we checked standard conference posting websites in our field (e.g., [mathmeetings.net](http://mathmeetings.net)) to confirm that there were no conflicts.

### Our Initial Vision

With modest funding, we decided to hold a weekend workshop in Boston centered around minicourses by four leading women researchers. Our experiences at the IAS program had taught us that networks are best built while actively working on math, so we decided on a format of morning lectures and afternoon problem sessions. Based on a positive experience at Women@AGNES at Brown, we also decided to have short participant talks over lunch to serve as mathematical introductions and encourage more communication. For funding reasons again, we decided to draw participants mainly from the Northeast of the US. We planned for lectures to be open to everyone and for problem sessions to be open only to registered participants. Registration was not restricted based on gender.

### Advertising to a Wide Audience

Once we had official funding confirmation and had chosen a date, we started advertising the workshop widely. We began by posting on all of the standard conference announcement sites in our field. We also emailed listservs for women in math (previous attendees of the WAM program at the IAS) and subject specific lists in adjacent fields (such as Women in Numbers and Women in Noncommutative Algebra and Representation Theory). However, all of these “standard” techniques only reach participants who are already tuned into networks of algebraic geometers; they are also prone to missing or excluding mathematicians

from marginalized groups. Our goal was to go deeper! So we made the effort to email announcements and mail posters to all schools in the northeastern United States with a graduate algebraic geometry class. While this consumed time and resources, it paid dividends in recruiting a diverse and enthusiastic cohort of participants!

### Changing Our Vision

We convened in November 2017 to review applications for funding for travel and accommodations—we had about twice as many applications as we had expected and more than four times as many as we could afford to fund. On the other hand, several applicants mentioned that they felt mathematically isolated in their departments and emphasized how keen they were to attend. We wanted to fund everyone!

Rohini mentioned this conundrum to Michelle Manes (U. Hawaii), who said, “Just ask for more money—ask the NSF, ask the NTF (Number Theory Foundation).” Manes is currently a program officer at the NSF; we contacted her for this article, and she elaborated on the above advice: “Math workshop and conference proposals have ‘target dates,’ which are more flexible than what NSF calls ‘deadlines.’ If you apply for NSF funding for a workshop, you should try to submit on the schedule suggested by the major program (Analysis, Algebra and Number Theory, etc.). But if you miss the window, just send an email to the Program Officer listed on the webpage and ask if you can submit off the regular schedule. It helps if you have a reason why you missed the target date (like being inundated with more applications than expected), if your request is not too big, and if you still give them enough lead time to review the proposal and process a recommendation.”

We submitted grant applications to the NSF (with the help of Bjorn Poonen, serving as the PI) and NTF, asking in total for exactly as much money as we would need to



Rohini Ramadas and Svetlana Makarova during a problem session.

fund every applicant. We heard back very quickly—both applications were approved.

The workshop ended up being much larger than we had envisioned, with sixty-six people attending in total (forty-seven of whom were graduate students), and forty-three out-of-town participants whose travel and/or accommodations we funded.

### Timeline

Jul. 2017	Contacted speakers Got approval from departments Submitted initial Ambassador grant proposal to the IAS
Aug. 2017	Received grant from IAS Confirmed dates with speakers
Sep. 2017	Opened applications Made conference poster and website Began advertising
Nov. 2017	Closed applications Funded initial set of participants
Dec. 2017	Applied (late) for funding from NSF and NTF
Jan. 2018	Funded additional participants Arranged logistics (hotel, etc.)
Feb. 16–18 2018	Conference weekend
Mar. 2018	Final deadline for reimbursements Closed accounts and wrote reports

### The Workshop

We believe, based on anonymous feedback we received from participants, that the workshop was a great success. Participants mentioned that the environment was welcoming and supportive, that they made connections with peers and mentors, and left with increased optimism about the prospect of being in algebraic geometry.

When we look back and try to identify the factors that made the workshop so successful, a few things stand out. Firstly, the lecturers pitched the minicourses well, making them accessible and interesting to a range of students, including those who had taken one graduate algebraic geometry class but had not yet begun doing research. Secondly, each of the lecturers came up with a set of problems—concrete and appropriately pitched—for students to work on in groups after lectures. The problem sessions were led by graduate student and postdoc TAs and were perhaps the most popular aspect of GWAGWMMG. Thirdly, meals were provided on location, which made it easier for people to make new friends.

Finally, while the short participant talks served as effective professional introductions, some participants mentioned that the lack of downtime made the weekend exhausting. Looking back, this is something we’re still conflicted about.



Shiyue Li, Claudia Yun, and Sarah Arpin during a problem session.

### Anonymous Feedback from Participants

"This was the best algebraic geometry conference I have ever been to! Everyone was so encouraging, positive, kind, and supportive [...] I found myself in an environment where I was completely unafraid of asking questions or looking stupid."

"Initially I was worried about the problem sessions being too difficult, but in fact they were the best part of the workshop and I feel I learnt a lot."

"It felt like there was such a low barrier to just getting some math done with other people, and it expanded my network of math people that I am excited about working with in the future, and who I can think about turning to when I have a question in some area."

### Challenges of Organizing Such a Workshop

Our goal was to create a welcoming environment where everyone felt valued and included. Here are some suggestions. While we think the following are best practices at any conference, they are especially important at a workshop expressly for underrepresented communities.

1. Think carefully about using inclusive language (in promotional materials, at the start of the workshop, etc.) that sets the tone you want from the beginning. We recommend using language that clearly welcomes transgender and nonbinary mathematicians.
2. Whenever possible, give agency to participants to define their own identity. This is particularly important when it comes to registration forms and name badges. For example, when asking questions about gender, race, ethnicity, pronouns, and so on, avoid using multiple-choice questions and instead give your participants a place to answer these personal questions in their own words.
3. Recognize that topics related to identity (gender/race/ethnicity/pronouns) can be extremely sensitive for

people and as such need to be handled with care. For example, (1) give examples of pronouns while indicating these are not a complete list, and (2) be clear about with whom personal information will be shared and for what purpose.

4. Is your venue suitably equipped for such an event? Is it ADA accessible? Are there nearby gender-neutral bathrooms and lactation rooms? Does your schedule accommodate the outside needs of your participants?

Of course, this list is not exhaustive, and these were not perfectly or completely implemented at our workshop. Ask around to see what makes people feel welcome and comfortable at conferences. (These suggestions are influenced from conversations with Juliette Bruce.)

### Positive Outcomes

There was an overwhelming feeling at the workshop that similar events should be organized in the future. Of the forty-two respondents to an anonymous survey, 100% indicated that they thought events like GWAGWMMG are important and that they would attend similar events in the future (all but two and one, respectively, gave this 5/5). Half expressed strong interest (5/5) in organizing similar events in the future!

Since then, workshops with similar models have been organized. Most notably, after attending GWAGWMMG last year, Juliette Bruce, together with Christine Berkesch and Patricia Klein, organized a similar Graduate Workshop in Commutative Algebra for Women and Mathematicians of Minority Genders in April 2019. The momentum from GWAGWMMG doesn't stop at graduate workshops either: We, together with Melody Chan, Antonella Grassi, and Julie Rana, are organizing a collaborative research conference for women in algebraic geometry at ICERM in July 2020.

This article is also an invitation: if you would like to organize an event in your area for graduate students from underrepresented communities, here is one potential



Amy Huang, Renee Bell, Wanlin Li, Allison Miller, Chi-Yun Hsu, and Maria Ines de Frutos Fernandez during a problem session.

model. And if your experiences are like ours, it will be well worth your effort!

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Rohini Ramadas



Isabel Vogt

### Credits

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## Organizing a Summer School

### *Ben Elias and Nicholas Proudfoot*

Summer schools can be wonderful venues for graduate students and postdocs to meet other people in the community and learn some interesting mathematics. We run an annual summer school called WARTHOG (Workshop on Algebra and Representation Theory, Held on Oregonian Grounds), which will celebrate its tenth anniversary in the summer of 2019. Below we will describe some of the organizational details that have worked well for us, from the high level down to the nitty gritty, in the hope that you, our dear

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<sup>1</sup>The 2019 iteration of WARTHOG was our first experiment with having two Main Speakers who work closely together to develop the program.

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**Figure 1.** WARTHOGgers in their natural habitat.

reader, can emulate the parts you like. You'll have to find your own acronym, though.

### Overview

Our workshops always have a relatively narrow focus. We start with the basics and aim to reach one specific new and exciting result by the end of the week while being exposed to various ideas of broad interest along the way. The school is led and “mathematically organized” by one<sup>1</sup> Main Speaker. The Main Speaker need not be the progenitor of the result; this has been the case for only about half of our workshops. Our practice is to invite people whom we know to be excellent speakers and thoughtful planners and allow them to pick whatever topic they would like. We often have one or two assistants to give lectures and help with the exercise sessions. You can see a list of topics and speakers on either of our websites.

Perhaps one indication of the success of our summer school model is the number of students who return year after year, often to learn about subjects that are not directly related to their research. The first-named organizer (Ben) was a participant for three years, then was invited to lead his own workshop, and finally joined the faculty at the University of Oregon and became a coorganizer. (Disclaimer: Due to a shortfall in the Oregon state budget, not all repeat participants of WARTHOG will be offered faculty positions.)

We have been fortunate to receive NSF support for WARTHOG in the form of two CAREER grants, but it is worth noting that summer schools can be run rather inexpensively. We pay the airfare of the Main Speaker and the assistants. The Main Speaker usually stays in one of our houses. All of the other nonlocal participants stay in a dormitory, which we pay for directly. We expect most

<sup>2</sup>The first Talbot workshop was held at a farmhouse called Talbot House, and the name stuck.

<sup>3</sup>The first of these workshops was coorganized by Sam Payne, and the third by Hannah Markwig.